REMARKS

As part of a *Request for Continued Examination* (RCE), Applicants have herein canceled the system claims in favor of method claims. Specifically, new to the application are independent claims 146, 148 and 149 directed to methods of preparing a medium with bubbles formed therein for immediate injection into a patient in connection with a medical procedure. Dependent claims 2-4 and 6-41 have been amended so that their limitations build upon the methodology set forth in claim 146. Similarly, claims 68-72 and 81-85 have been revised to be dependent upon claim 149. Claims 1, 5, 42-67, 73-80 and 86-145 have been canceled herein or in previous correspondence. Be advised that the claims now at issue are not the first to be directed to the methodology taught in the present application. Claims 134-139 were previously removed from the application due to a restriction requirement.

In lieu of the system claims, the method claims are introduced to accentuate the novelty of the subject matter at issue, particularly that relating to creation of a medium having the desired properties (e.g., size/concentration/composition of the bubbles, etc.) and injection of the medium immediately after creation thereof into a patient, all of which controlled with a single system. During a telephonic interview on 12 October 2010 in which Examiner Melissa Perreira, Arthur (Ned) Uber, III (one of the inventors or record) and the understand attorney participated, the Examiner recommended use of method claims to better articulate this subject matter. Specifically, she suggested that if the subject matter were to be expressed as a method that it would assist her in understanding the novelty of the invention from creation through administration of the medium into a patient as part of a single process.

Support for the claimed subject matter can be found in the specification at multiple locations. Specifically, with reference to the published application (i.e., U.S. Patent Application Publication 2004/0253183), paragraph [0022] states that another objective of the invention is to "provide an apparatus that creates microbubbles on demand within a medium, which is intended for contemporaneous

injection into a patient...." (emphasis added) After disclosure of various bubble generator embodiments in previous paragraphs, paragraph [0132] states that the "microbubble generators disclosed herein also have application beyond immediate injection into the patient." Likewise, paragraph [0051] states: "Fig. 2A illustrates ... a system ... for creating microbubbles on demand for use within a medium administrable to a patient undergoing an imaging procedure. * * * [T]he system 1 enables its pump 31 to convey liquid from container 30 to the microbubble generator 32 wherein microbubbles are formed on demand within the liquid. Subject to further processing by the controller 33 ... as is explained below, the liquid and the microbubbles it carries is eventually conveyed through tubing to the patient into whom it is injected through the catheter 22, as shown in FIG. 2A." Paragraphs [0002], [0016]-[0021] and [0025]-[0028] also provide support for the claimed limitations. See also original claims 4, 45 and 135. Paragraphs [0054] and [0055] also provide support for the limitations, particularly when read in light of paragraphs [0022] and [0132].

Applicants believe that all of the method claims are patentable over the prior art of record. Neither alone nor in combination do the *Rossling et al.* and *Uber, III et al.* patents render obvious the subject matter of claims 146, 148 and 149. The *Quay et al.*, *Daum et al.* and *Engel* references also do not render obvious any of the pending claims. In fact, Applicants submit that even previous versions of the claims recite patentable subject matter. Nevertheless, with the amendments offered herein, various limitations have herein been added to the claims to augment their novelty over the prior art, yet still enable the invention to be protected in the appropriate breadth.

As explained in earlier arguments, incorporated herein by reference, the *Rŏssling et al.* patent teaches only a process of producing pre-packaged (dried, spherically-shaped, gas-containing) microparticles, and nothing more. Upon delivery to a customer, the package must be opened and the dried particles combined with water to form a bubble contrast medium. The *Uber, III et al.* patent teaches the filing of a syringe with such a medium and then placing it into their injector system. After

the syringe containing the rehydrated bubble medium is loaded into the system of *Uber et al.*, its combination with the teachings of *Rŏssling et al.* yield the same system as that taught in the *Uber, III et al.* patent itself, specifically, a system that is only capable of reducing the concentration of bubbles in the medium to a desired level. *Quay et al.* pertains only to bulk formation of a bubble contrast medium, which is then injected into the blood stream. *Daum et al.* pertains only to creation of bubbles directly within a blood vessel by means of gas injected via a needle. Neither reference discloses a method in which a controller controls the pressuring device and the bubble generator through which it controls (i) the rates of flow of a liquid and a gas into the bubble generator, (ii) at least one property of the medium created therewith, (iii) the rate at which the medium flows from the outlet of the bubble generator, and (iv) the rate at which the medium is injected into the patient upon communication of the medium from the outlet of the bubble generator. This is something that the prior art simply does not do. Creation and adjustment of the properties of the medium, and its administration into a patient, all of which controlled by a single controller in the context of a single process, is clearly new.

Although various claims have been amended or canceled during prosecution, Applicants wish to point out that such revisions are not meant to be construed as an admission of unpatentability of the subject matter recited in earlier versions of the claims. Instead, such revisions should be considered as having been made only to expedite prosecution of the application. They should not be considered as a surrender of the right to pursue any subject matter disclosed in the present application or in any continuation or divisional application based thereon that may be filed in the future.

CONCLUSION

Before entry of this *Amendment And Response*, the present application had forty-three (43) claims pending, two (2) of which independent. Another ninety eight (98) claims (i.e., claims 42-139)

were withdrawn due to a *Restriction Requirement*. Upon entry of this *Amendment And Response*, the application will contain fifty three (53) claims, three (3) of which independent.

Given the foregoing amendments and arguments, Applicants respectfully request withdrawal of the rejections set forth in the *Office Action* dated 26 May 2011. Applicants believe the application is ready to be allowed. If the Examiner has any questions regarding this *Amendment and Response*, she is invited to call the undersigned at the telephone number listed below.

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